

What is the best grain-size for defining verb classes?

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Verb classes are sets of semantically-related verbs sharing a range of linguistic properties, such as:

- possible realizations of arguments
- the interpretation associated with each possible argument realization

The big question: What is the best grain-size for defining such classes, that is, the most useful for understanding member behavior and overall lexical organization?

EXAMPLE: Options for the class membership of English *run*, listed from broadest to narrowest:

- COARSE-GRAINED CLASSIFICATION: *run* is a manner verb (and not a result verb like *go*).
- MEDIUM-GRAINED CLASSIFICATION: *run* is a manner of motion verb.
- FINE-GRAINED CLASSIFICATION: *run* is a verb lexicalizing a gait characteristic of animates often used with the intent of reaching a goal.

- (1)
- a. MANNER VERBS: cry, hit, jump, pound, **run**, scribble, shout, shovel, smear, spray, stir, walk, whisper, . . .
 - b. MANNER OF MOTION VERBS: amble, crawl, fly, hop, jog, jump, gallop, limp, **run**, scamper, skip, swim, trudge, walk, wander, . . .
 - c. DISPLACEMENT-IMPLYING MANNER OF MOTION VERBS: fly, jump, roll, **run**, slide, walk, . . .

A related question: Do finer-grained classifications obviate the need for coarser-grained ones?

1 Introduction: The appeal of (medium-grained) verb classes

Fillmore’s “The Grammar of *Hitting* and *Breaking*” (1970) shows the importance of verb classes as:

- a device for capturing patterns of shared verb behavior
- a means of investigating the organization of the verb lexicon
- a means of identifying grammatically relevant elements of meaning

Fillmore’s study focuses on the verbs *break* and *hit* as representatives of two larger classes of verbs (1970: 125, (15)–(16)), whose members share patterns of behavior.

- (2)
- a. *Break* VERBS: bend, **break**, crack, fold, shatter, split, snap, . . .
 - b. *Hit* VERBS: bash, bump, **hit**, kick, pound, slap, strike, stroke, tap, whack, . . .

The *break* verbs and *hit* verbs show considerable divergences in their argument realization options.

- (3) Availability of transitive use and instrumental *with* phrase:
- a. The boy broke the window (with a ball).
 - b. The boy hit the window (with a ball).
- (4) Availability of the causative alternation (V-transitive = ‘cause to V-intransitive’):
- a. The boy broke the window./The window broke.
 - b. The boy hit the window./*The window hit.
- (5) Availability of body-part possessor ascension (Fillmore 1970: 126, (23)–(26)) :
- a. I broke his leg./*I broke him on the leg.
 - b. I hit his leg./I hit him on the leg.
- (6) Availability of the *with/against* alternation (Fillmore 1977: 74–78):
- a. Perry broke the fence with the stick. \neq Perry broke the stick against the fence.
 - b. Perry hit the fence with the stick. = Perry hit the stick against the fence.

Concomitantly, the members of these sets of verbs share the same broad semantic characterizations:

- (7) a. *Break* verbs, i.e. Change of state verbs: involve a change of state in an entity.
 b. *Hit* verbs, i.e. Surface contact verbs: involve (often forceful) contact with an entity, without entailing a change in its state.
- (8) a. # The rocks broke the windshield, but luckily it wasn’t damaged.
 b. The rocks hit the windshield, but luckily it wasn’t damaged.

Further support: comparable semantic classes of verbs, again with distinct behavioral patterns, can be identified in other languages, such as Lhasa Tibetan (DeLancey 1995, 2000), Berber, Warlpiri, and Winnebago (Guerssel et al. 1985).

2 Moving beyond Fillmore’s “The Grammar of *Hitting* and *Breaking*”

- The fact that classes of verbs with similar meanings show characteristic argument realization patterns suggests the patterns can be attributed to facets of meaning common to class members.
- Many subsequent studies—both large- and small-scale—have confirmed and extended Fillmore’s findings (e.g., Dixon 1991, Faber & Mairal Usón 1999, Green 1974, Gruber 1967, Jackendoff 1990, L&RH 1991, Willems 1981, Zwicky 1971).

AN EXAMPLE: My book *English Verb Classes and Alternations* (1993) classifies verbs that don’t take sentential complements according to shared participation in argument alternations, yielding a classification comprised of Fillmorean verb classes, with some subclasses.

PROPOSED CLASSES: change of state verbs, manner of motion verbs, directed motion verbs, sound (emission) verbs, manner of speaking verbs, perception verbs, verbs of gestures and sign, weather verbs, . . .

3 Determining the appropriate grain-size for semantic verb classes

3.1 The issue: Claims that varying grain-sizes are relevant

Different studies argue for positing verb classes of varying grain-sizes.

THE INITIAL EXAMPLE REVISITED: Three options for the class membership of English *run*.

- **Coarse-grained classification:** *run* is a manner verb (and not a result verb like *go*); similarly, *hit* is a manner verb (and not a result verb like *break*).

- (9) a. MANNER VERBS: specify a manner of carrying out an action.
cry, hit, pound, jump, run, walk, shout, whisper, shovel, wipe, smear, spray ...
- b. RESULT VERBS: specify the result of an event.
arrive, break, clean, come, cover, crack, die, empty, fill, open, put, remove, ...

WHY THIS DISTINCTION MATTERS: It influences a verb's argument realization options: manner verbs show considerably more and different options than result verbs, particularly with respect to object alternations and object types (RH&L 1998).

- (10) Pat ran. (activity)
Pat ran to the beach. (directed motion)
Pat ran herself ragged. (change of state)
Pat ran her shoes to shreds. (change of state)
Pat ran clear of the falling rocks. (directed motion)
The coach ran the athletes around the track. (causation)
(likewise many manner of motion verbs)

- (11) The students went.
The students went to the beach.
* The jetsetters went themselves ragged.
* The runner went his shoes to shreds.
* The pedestrian went clear of the oncoming car.
* The coach went the athletes around the track.
(likewise many directed motion verbs)

- **Medium-grained classification** (Fillmorean): *run* is a manner of motion verb (contrast membership in another manner verb subclass, e.g., manner of speaking verbs).

- (12) a. MANNER OF MOTION VERBS: *amble, crawl, fly, hop, jog, jump, gallop, limp, run, scamper, skip, swim, trudge, walk, wander, ...*
- b. MANNER OF SPEAKING VERBS: *holler, mumble, murmur, mutter, scream, shout, stammer, whisper, yell, ...* (Urban & Ruppenhofer 2001, Zwicky 1971)
- c. *Hit*, I.E. SURFACE CONTACT, VERBS: *beat, hit, kick, pound, rap, tap, whack, ...*

WHY THIS DISTINCTION MATTERS: It determines quite specific argument realization options, such as types of objects allowed, participation in specific object alternations, and preposition choices.

- (13) Directional phrases (specify path of the subject):
- a. Tracy ran into the room/over the hill/up the stairs. (Tracy moves)
 - b. * Tracy shouted into the room/over the hill/up the stairs.
- (14) Addressee *to/at* phrases (specify path of the understood content of communication):
- a. Tracy shouted to/at Sandy. (the sound—a shout—moves)
 - b. * Tracy ran to/at Sandy. (on the relevant interpretation)
- (15) Complementary availability of message vs. extent objects:
- a. Tracy shouted/*ran a warning.
 - b. Tracy ran/*shouted a mile.

• **Fine-grained classification:** among manner of motion verbs, *run* lexicalizes a gait characteristic of animates that is often used with the intent of reaching a goal and, thus, it may implicate a path (Allen et al. 2007, Alonge 1997, Biberauer & Folli 2004, Fábregas 2007, Folli & Ramchand 2005).

- (16) a. DISPLACEMENT-IMPLYING MANNER OF MOTION VERBS: fly, jump, roll, **run**, slide, walk, ...
- b. OTHER MANNER OF MOTION VERBS: amble, dance, float, meander, prance, scamper, stroll, swim, wander, ...

WHY THIS DISTINCTION MATTERS: As the manner may implicate a directed displacement towards a goal, the verbs in (16a) are the most likely to allow directional interpretations of locative PPs (Gehrke 2008, Nikitina 2008, Thomas 2004).

- (17) a. John walked in [=into] the room. (goal interpretation possible)
- b. John danced in [\neq into] the room. (goal interpretation highly unlikely)

Exceptions are now cited to Talmy's (1975, 1985) claim that manner of motion verbs do not show directed motion interpretations in verb-framed (i.e. path) languages (Alonge 1997, Fábregas 2007, Folli & Ramchand 2005, Kopecka 2009, Levin, Beavers & Tham 2010, Martínez Vázquez 2001); these involve the same verbs.

- (18) a. Allez, courons dans la maison!
go-2PL, run-1PL in the house
'Come on, let's run in the house!' (French; Stringer 2006: 63)
- b. ... volaron a Mar de Plata ...
flew to Mar de Plata
'... they flew to Mar de Plata ...' (Spanish; Martínez Vázquez 2001: 52, (112))
- c. La rondine è volata al nido.
the swallow is fly.PSTPRT at.the nest
'The swallow flew to the nest.' (Italian)
- (19) a. *El barco flotó a la costa.
the boat floated to the coast
'The boat floated to the coast.' (intended; Spanish; Fábregas 2007:169, (5b))

- b. *La barca è galleggiata sotto il ponte.
 The boat is float.PSTPRT under the bridge
 ‘The boat floated (to) under the bridge.’
 (intended; Italian; Folli & Ramchand 2005:97, (32b))

3.2 A big question: Are Fillmorean or even larger verb classes really necessary?

THE QUESTION: Does recognizing finer-grained classes among, say, manner of motion verbs, obviate the need for recognizing the larger, Fillmorean class, or the still larger, manner class?

3.2.1 An argument that fine-grained detail matters: Boas’s study of ‘self motion’ verbs

- Boas (2008), extending a smaller study (Boas 2006), considers 16 manner of motion verbs—all verbs of ‘self motion’—with respect to 7 grammatical properties.

(20) “Self_motion frame: The SELF_MOVER, a living being, moves under its own power in a directed fashion, i.e. along what could be described as a PATH, with no separate vehicle.” (Boas 2008:31, n. 10)

(21) Terry walked/jogged/paraded/staggered into the town hall.

- Boas proposes the 16 verbs fall into 4 groups, each identified by a representative verb, with respect to these properties (2008: 34, Table 5).

	walk	jog	parade	stagger
Location PP	+	+	+	+
Zero-related Nominal	+	+	+	+
Resultative Construction	+	+	?	–
Caused-motion Construction	+	+	–	–
Preposition Drop Alternation	+	+	+	–
Induced Action Alternation	+	–	+	–
Adjectival Passive Participle	+	–	??	–

(22) The properties represented in the table (Boas 2008: 33):

- Location PP*: Gerry walked down the street.
- Zero-related nominal*: a walk
- Resultative construction*: Cathy walked herself to exhaustion/Pat off the street.
- Preposition drop alternation*: Julia walked across the town/Julia walked the town.
- Induced action alternation*: Claire walked the dog down the street/
The dog walked down the street.
- Adjectival Passive participle*: the walked dog

(23) The verb classes represented in the table (Boas 2008: 35):

- walk**
- jog, jump, waltz**

- c. bustle, hike, **parade**, swim
- d. amble, crawl, creep, frolic, limp, meander, scurry, **stagger**, totter, trot, wade, wander

- Boas notes that the groups differ with respect to how many properties in (22) their members show, with *walk* showing the most, verbs in the *parade* class showing the next most, and so on.
- Boas further argues, drawing on Snell-Hornby (1983), that there is a correlation between ‘verb descriptivity’—roughly, the degree of specificity or complexity of the manner that the verb lexicalizes—and the verb’s constructional distribution.

(24) “the higher the degree of descriptivity, the narrower the verb’s range of application is likely to be” (Snell-Hornby 1983: 35)

(25) Verb types ranked by degree of descriptivity (Boas 2008: 142):
walk < jog < parade < stagger

- Boas’ justification for differences in the descriptivity of the members of the four classes:

— *walk* has the lowest descriptivity as evidenced by its ability to combine with many types of depictive and manner phrases (2008: 35).

(26) with the sinuous grace of a cat, in a daze, with posed uncertainty, calmly, fiercely, aerobically, springily, silently, purposefully, like drunk soldiers in from the war, quickly and secretly, curiously (Boas 2008: 35; examples from FrameNet)

(27) *Kim bustled calmly out of the house.

— Verbs in the subsequent classes lexicalize successively more meaning components.

(28) “*jog* implies a higher speed than *walk* combined with an element of exercise” (2008: 35)

(29) *parade* involves display, organization, celebration, uniformity, path, place (Boas 2008: 36)

- BOAS’ QUESTION: “are there any particular meaning components of LUs [=lexical units] that contribute more to a verb’s descriptivity than other components and thereby have a direct impact on a LU’s syntactic distribution?” (2008: 33-34)

- A SECOND QUESTION: Do some of these components of meaning implicate coarse- or medium-grained classes? As Boas’ focus is verbs of self motion, this question is not confronted.

3.2.2 The rest of the talk previewed

PROPOSAL: Various grain-size verb classes DO matter. In English:

- Coarse-grained class membership determines the grammatical properties a verb may show.
- Medium-grained, Fillmorean class membership determines the properties’ precise instantiation.
- Still finer-grained meaning detail—and, hence, class membership—influences whether a verb may actually show a particular property, particularly in the absence of contextual support.

The various verb class grain-sizes and their effects have their origins in the lexical semantic representation of verb meaning.

4 Sources of verb class effects: Roots and event schemas

Organization of the verb lexicon into Fillmorean verb classes suggests a verb's meaning consists of:

- A part shared by all members of the same verb class: an event type or SCHEMA.
- A part that distinguishes among the members of a class: the ROOT.

(This division could also be conceptualized in terms of 'constructions' and 'verbs'.)

Concomitantly, many phenomena that come under the 'verb class' rubric can be understood in the context of two forms of linguistic description and the relation between them:

- the meaning lexicalized—or entailed—by the verb itself (its ROOT)
- the set of event types (or SCHEMAS)

Each provides a way of forming verb classes useful to language-specific and crosslinguistic studies.

As the effects of these components largely overlap, I focus on the root, but see Levin (2009).

4.1 The representation of verb meanings (RH&L 1998)

- **EVENT SCHEMA:** structural component of meaning, representing an event type; it is drawn from a limited inventory encompassing the event types encodable in language; it is often defined in terms of primitive predicates, forming a predicate decomposition. (e.g., Borer 2005, Goldberg 1995, Grimshaw 2005, Hale & Keyser 2002, Jackendoff 1990, Marantz 1997, Mohanan & Mohanan 1999, Pesetsky 1995, Pinker 1989, RH&L 1998).

Most important distinction is whether an event schema is simple, consisting of a single subevent, or complex, consisting of two subevents—a causing subevent and a result subevent.

(See Dowty 1979, Levin 1999, L&RH 1999, McCawley 1971, Morgan 1969, RH&L 1998).

- (30) a. Simple event schema: single subevent
e.g., [x ACT<*MANNER*>]
- b. Complex event schema: causing subevent CAUSE result subevent
e.g., [[x ACT<*MANNER*>] CAUSE [BECOME [y <*RES-STATE*>]]]

- **ROOT:** a sound/meaning pairing, representing a verb's core lexicalized meaning; characterized by an ONTOLOGICAL TYPE, chosen from a fixed set of options, including result state (*dry*), thing (*saddle*), stuff (*butter*), container/location (*bottle*), manner (*wipe*); the set of roots is in principle open-ended. (Roots are italicized and in angle brackets.)
- The basic event schema associated with a verb is determined by its root's ontological type; this association could be viewed in lexical, syntactic, or constructional terms.

4.2 The place of roots in defining verb classes

PROPOSAL: Verb roots give rise to verb classes due to their very nature: their ontological type, as well as the additional detail they encode.

4.2.1 Coarse-grained verb classes arise from the available ontological types

Verb classes will emerge because there are sets of verbs with roots of the same ontological type; such verb classes will necessarily be quite coarse-grained.

EXAMPLE: The manner vs. result verb dichotomy due to their roots' distinct ontological types.
 ⇒ This dichotomy figures in *run*'s coarsest-grained class membership

- This dichotomy, which crosscuts the transitive/intransitive distinction, is important in the organization of the English verb lexicon and in the characterization of English verb behavior (Fillmore 1970, Levin 1999, RH&L 1998, 2005, 2010).

	Manner Verbs	vs.	Result Verbs
— Verbs of Motion:	<i>run</i>	vs.	<i>come</i>
— Verbs of Damaging:	<i>hit</i>	vs.	<i>break</i>
— Verbs of Putting — 2-dim:	<i>smear</i>	vs.	<i>cover</i>
— Verbs of Putting — 3-dim:	<i>pour</i>	vs.	<i>fill</i>
— Verbs of Removal:	<i>shovel</i>	vs.	<i>empty</i>
— Verbs of Combining:	<i>shake</i>	vs.	<i>combine</i>
— Verbs of Killing:	<i>stab</i>	vs.	<i>kill</i>
— Verbs of Sound:	<i>shout</i>	vs.	<i>say</i>

- This dichotomy extends to verbs that may not be easily put into larger lexical 'domains' spanning manner and result verb classes.

- (31) a. MANNER VERBS: cry, eat, exercise, mutter, scribble, shout, squeak, waltz, ...
 b. RESULT VERBS: arrive, dry, come, destroy, gladden, melt, widen, ...

WHY THIS DICHOTOMY MATTERS

- Membership in the manner or result class is necessary for showing certain behavioral properties.
- Transitive manner verbs (e.g., surface contact) and result verbs (e.g., change of state) differ in their behavior: the availability of unspecified and non-subcategorized objects, and, thus, object alternations, as well as the causative alternation (Fillmore 1970, L&RH 1991, RH&L 1998).

- (32) a. UNSPECIFIED OBJECTS: Kim scrubbed/*broke.
 b. NON-SUBCATEGORIZED OBJECTS: Kim scrubbed/*broke her fingers raw.
 c. OBJECT ALTERNATIONS: Kim scrubbed the tub/the dirt from the tub.
 Kim broke the window/*Kim broke the beauty from the window.
 d. CAUSATIVE ALTERNATION: Kim broke/wiped the window; The window broke/*wiped.

- The source of these differences: distinct basic root–event schema associations (RH&L 1998).

- (33) a. Manner root → simple event
 [x ACT<MANNER>]
 b. Result state root → complex event
 [[x ACT] CAUSE [BECOME [y <RES-STATE>]]]

- These associations have repercussions for argument realization due to a condition on the event structure-to-syntax mapping which ensures it preserves facets of event structure.

THE STRUCTURE PARTICIPANT CONDITION: There must be an argument XP in the syntax for each participant in the event structure. (RH&L 1998:113, (25a); also Grimshaw & Vikner 1993, van Hout 1996, Kaufmann & Wunderlich 1998, L&RH's 1999)

- A change of state verb, as a result verb, has a complex event structure with two specified participants and both must be expressed (Structure Participant Condition); thus, it must have two arguments. Concomitantly, its object realizes the participant of the second, result subevent.

CONSEQUENCES: No unspecified objects; choice and interpretation of object is fixed: get uniform semantics (patient), determined by its event structure position.

- Since a surface contact verb, as a manner verb, has a simple event structure with only one specified participant, the actor, only this participant must be expressed (Structure Participant Condition), even though such verbs have roots associated with two participants.

CONSEQUENCES: The non-actor argument does not fall under the Structure Participant Condition, and can be left unexpressed, giving an unspecified object interpretation. Similarly, other than ‘normal’ objects fine; thus, no reason for object to have consistent semantics.

- SUMMARY: Certain behavioral properties are available to a verb by virtue of its membership in the manner or the result verb class arising from their roots’ ontological types.

4.2.2 Medium-grained verb classes arise from subclasses of roots of a single ontological type

PROPOSAL: Roots are not atomic: they provide detail beyond their ontological type relevant to the grammar; this additional detail gives rise to medium-grained—i.e. Fillmorean—classes.

- EVIDENCE: All verbs with complex event schemas—causative verbs—have result roots, but they fall into grammatically relevant subclasses according to the type of result involved: a result state (lexicalized by the root; *dry*, *break*), a created object (*create*, *build*), a result location (which may or may not be lexicalized by the root; *put*, *bottle*); see Levin (1993).

- (34) a. *dry*: [[x ACT] CAUSE [BECOME [y <DRY>]]]
 b. *create*: [[x ACT] CAUSE [BECOME [y <EXIST>]]]
 c. *bottle*: [[x ACT] CAUSE [BECOME [y BE AT <BOTTLE>]]]

- Thus, verbs form classes due to sharing roots of identifiable subtypes of an ontological type; such classes are medium-grained; they may give rise to even finer-grained classes; see section 5.

4.2.3 Support for medium-grained manner verb classes from objects and object alternations

- Just as there are identifiable subclasses of result verbs, there are identifiable subclasses of manner verbs, e.g., *hit*-type and *wipe*-type surface contact verbs, manner of motion verbs, verbs of sound.

- How best to characterize these classes depends on how best to represent a root’s ‘meaning/content’: e.g., Jackendoff’s (1990) notion of a ‘3-D model’ to encode an ‘action pattern’, with these classes, then, each presumably involving a distinct type of action pattern.

- Why identify these subclasses? Membership in a medium-grain class determines the precise instantiation of the argument realization properties licensed by having a manner root.

- OBJECT CHOICES: As manner verbs, manner of motion verbs—including *run*—and manner of speaking verbs allow for objects, but the actual semantic types of objects allowed depend on the nature of the manner: the objects must be semantically compatible with the manner.

(35) Complementary availability of message vs. extent objects:

- a. Tracy shouted/*ran a warning.
- b. Tracy ran/*shouted a mile.

Thus, subclasses of manner verbs emerge: verbs having roots that license a particular object type.

• OBJECT ALTERNATIONS: Since manner verbs allow for flexibility in object choice, even a ‘selected’ object need not always be expressed as an object, giving rise to object alternations; however, the object alternation(s) shown by a given verb reflect(s) the nature of its root.

(36) Kelly wiped the table./Kelly wiped the crumbs off the table.

— Many object alternations arise because certain manner verbs have roots paired with both basic and derived, ‘augmented’ event schemas, the latter with an ‘alternate’ object choice (Levin 2006).

(37) TEMPLATE AUGMENTATION: Event schemas may be freely augmented up to other possible schemas in the basic inventory of event schemas. (RH&L 1998)

— An ‘augmented’ event schema is a complex event schema consisting of two simple event schemas: a causing subevent—containing the verb’s root—and a newly introduced result subevent. (Could be seen as putting verbs in new constructions, licensed by criteria in Goldberg 1995, 1997.)

— EXAMPLE: The manner verb *wipe*, which describes a form of contact by an actor with a surface.

Due to its manner root, *wipe* has a basic simple event schema, so is eligible for template augmentation: the simple event schema can be augmented to give a ‘derived’ removal event, where an added predicate (*off*) licenses a ‘stuff removed’ argument, and the ‘normal’ (surface) object appears in the newly introduced result subevent.

- (38) a. Kelly wiped the table.
[x ACT<*WIPE*> y]
- b. Kelly wiped the crumbs off the table.
[[x ACT<*WIPE*> y] CAUSE [BECOME [z NOT AT <*PLACE*>]]]

Presumably, template augmentation is possible since wiping is a conventional means of effecting removal of stuff from a surface, even if the verb *wipe* does not entail it (Talmy 2000).

— Template augmentation can introduce various types of result subevents, but as each type is typically brought about by a particular kind of action, each type can only be paired with certain verbs: those manner verbs whose roots designate actions conventionally used to bring about that type of result.

(39) Locative alternation — ‘removal’ subtype: Removal result subevent

- a. Jack wiped the counter.
- b. Jack wiped crumbs off the counter.

wipe VERBS: rake, rub, scrub, shovel, sweep, wipe, ...

(40) Locative alternation — ‘putting’ subtype: Covering result subevent

- a. Jill sprayed the wall with paint.
- b. Jill sprayed paint on the wall.

smear VERBS: dab, smear, splash, spray, sprinkle, stuff, ...

(41) Material/product alternation: Creation result subevent

- a. Martha carved a toy out of the piece of wood.
- b. Martha carved the piece of wood into a toy.

CREATION-DIRECTED ACTIVITY VERBS: carve, knit, sew, weave, whittle, ...

— Again, medium-grained subclasses of the manner class emerge: verbs with a ‘derived’ complex event schema sharing the same type of result subevent: e.g., removal, covering, creation.

- SUMMARY: Being a manner verb is necessary to allow for certain object choices and object alternations, but alone it is not sufficient to guarantee that a particular option is possible: a verb’s manner subclass determines this.

5 Fine-grained verb classifications revisited

THE QUESTION: Should subclasses of the manner and result classes be further subclassified?

AN ANSWER: Boas (2008) argues based on an investigation of self motion verbs—themselves, a subclass of manner of motion verbs—that the self motion verb class should be split into finer-grained classes on the basis of degree of verb descriptivity.

A FURTHER QUESTION: Is verb descriptivity the right basis for such finer-grained splits, as Boas suggests, or are there other bases for further splits?

5.1 Limitations of verb descriptivity as a basis for subclassification

- The idea that a verb’s behavior reflects the specificity of its meaning as Snell-Hornby and Boas propose is intriguing, but at least for verbs of self motion the link seems less strong than expected.
- The members of the subclasses that Boas posits do not share precisely the same properties, as in Fillmorean classes; rather, the class members appear to share about the same number of properties.
- Further, a comparison of the *jog* and *parade* classes suggests that the distinction between the classes is somewhat arbitrary where properties are concerned, though it may be justifiable in terms of verb descriptivity.

(42) Comparisons of some of Boas' *jog* and *parade* verbs (2008: 34, Table 5)

	jog verbs			parade verbs	
	jog	jump	waltz	hike	swim
Location PP	+	+	+	+	+
Zero-related Nominal	+	+	+	+	+
Resultative Construction	+	+	–	+	+
Caused-motion Construction	+	–	+	–	–
Preposition Drop Alternation	+	+	–	+	+
Induced Action Alternation	–	–	+	–	–
Adjectival Passive Participle	–	–	–	–	–

• At least some of the properties said to be unavailable to certain verbs—a property attributed to their increased descriptivity—are indeed available, though they may require further contextual support (perhaps to defease default meaning elements attributable to the increased descriptivity).

— Members of the **jog** class show the resultative construction, as Boas himself notes.

- (43) a. Kim jogged Pat off the street.
 b. Kim was excited and crawled very fast. Kim crawled Pat off the blanket.
 c. ? Kim was drunk and wanted to walk fast to get home. When exiting the bar, Kim tottered Pat off the sidewalk.
 d. * Kim didn't know where she was going and moved around quickly. By accident, Kim wandered Pat off the street.

(Boas 208: 43, (31))

— Similarly, the preposition drop alternation is more widespread than Boas claims: despite his claim to the contrary, it is found with *trot* and *wade*—both members of the *stagger* class.

- (44) a. The trainee exhibits the patience needed to walk and **trot** the course, which is translated to his equine partner. (www.royrogersrangers.com/practice.html)
 b. One of the men safely walked across the stream; Gisting was the second to attempt to **wade** the stream when he slipped . . . (www2.wspa.com/.../man_falls_80_feet_down_falls_rescuers_trying_to_gear-17649/)

• IMPLICATIONS: Boas' fine-grained verb classes do not stand up to scrutiny:

— Self motion verbs do not differ among each other in their behavioral options as much as Boas' own discussion suggests.

— With sufficient contextual support, the effects of verb descriptivity may apparently be overridden; thus, all self motion verbs might ultimately show (close to) the same properties.

— It appears that while verb descriptivity may affect how easily a verb may show a certain property, the availability of this property is determined by its root's ontological type; finer-grained detail (i.e. descriptivity) is implicated in whether the property is actually manifested.

5.2 What, if any, fine-grained verb classes matter?

Nevertheless, there are fine-grained verb classes that matter, but they are based on specific components of the root rather than the degree of verb descriptivity.

CASE STUDY: CAUSATIVES OF VERBS OF SOUND (Levin, Song & Atkins 1997, Song 1996)

(45) VERBS OF SOUND: beep, buzz, clatter, creak, gurgle, hiss, honk, jingle, rattle, ring, rumble, rustle, squeak, thud, whirl, ...

- VERBS OF SOUND: describe the emission of a sound, primarily by inanimates; they differ from verbs of animal sound (e.g., *coo*, *neigh*) and verbs of manner of speaking (e.g., *mumble*, *yell*), where the sound is emitted via the vocal tract (though some verbs belong to more than one of these classes):

- The most obvious way to characterize verbs of sound is in acoustic terms (Snell-Hornby 1983):
 - VOLUME: a rumble is typically loud, a whirl is not
 - PITCH: a squeak is usually high, a rumble low
 - RESONANCE: a rattle as compared with a thud
 - DURATION: a gurgle or rumble must have duration, a honk or beep may take an instant

- Verbs of sound typically describe internally caused eventualities (L&RH 1995), i.e., those construed as arising from inherent properties of their single argument.

And, like internally caused verbs, they usually don't show causative uses, but there are exceptions:

(46) a. The truck rumbled./*Peter rumbled the truck.

b. The tea kettle whistled./*The boiling water whistled the tea kettle.

(47) a. Outside the nurses were clattering the teacups. (BNC)

b. The wind crackled the edges [of a piece of paper]. (BNC)

c. By noon, rain still pinged and rattled her window ... (J.D. Lamb, *A Question of Preference*, Kensington, New York, 1994, p. 201)

d. Footsteps creaked the gleaming oak-plank floor, and Celia appeared at the far end of the dining room ... (C. Cail, *Unsafe Keeping*, St. Martin's, New York, 1995, p. 50)

- Availability of a causative use can be traced to another key characteristic of each verb of sound: the mode in which the sound is produced:

- internal to the sound emitter: *babble*, *gurgle*, *rumble*
- external to the sound emitter: *clatter*, *jingle*, *rattle*
- in either way: *whistle* (bullet vs. kettle)

THE GENERALIZATION: Verbs of sound with causative uses describe externally produced sounds.

- Verb descriptivity does not appear to be a factor in determining the availability of a causative use:

- Mode of sound production is a property of every verb of sound.

- The same dimensions are involved in defining all sounds (volume, pitch, duration, resonance); even if one verb of sound provided more specific information about one dimension than a second one, this difference would still not bear on the availability of a causative.

- Of the characteristic properties of a sound, only mode of production influences verb behavior.

- What makes mode of sound production special? It involves how the event comes about: cf. a causal chain model of event conceptualization as a basis for argument realization (Croft 1991, DeLancey 1984, Talmy 1976).
- Contrast the meaning facets that don't play a part in determining whether a verb of sound has a causative: the volume, pitch, resonance, and duration of the sound.
- Behavior of verbs of sound is reminiscent of difference in behavior of *splash* and *smear*:

- (48) a. Terry smeared paint on the wall./*Paint smeared on the wall.
 b. Sam splashed paint on the wall./Paint splashed on the wall.

Hale & Keyser (1997): *smear*, but not *splash*, involves a manner describing action of agent.

- A comparable notion governs whether verbs of sound may show directed motion uses: these uses are available when the emitter is construable as self-energetic, with the sound being a necessary concomitant of its motion.

- (49) a. The truck rumbled/shrieked into the driveway.
 b. The bullet whistled over his shoulder.
 c. * The shoes squeaked into the room.
 d. * The reversing truck beeped into the driveway.

- SUMMARY: Subclasses arises from medium-grained classes, but due to features relevant to the 'causative/agentive' structure of the event and not to a verb's general descriptivity.

6 Conclusions

- Verb classes of various grain sizes play a part in characterizing verb behavior: coarse-, medium- or Fillmorean-, and fine-grained.
- These class sizes reflect the the various ways in which a verb root can be classified, as well as its integration with event schemas to form representations of verb meaning.
- Coarse-grained (e.g., manner vs. result) classification arising from a root's ontological type determines the properties a verb may have available; finer-grained classification arising from further properties of the verb root determines how and whether these properties are actually instantiated.

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